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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,275	08/06/2001	Kia Silverbrook	YU132US	1826
24011	7590	12/11/2003	EXAMINER	
SILVERBROOK RESEARCH PTY LTD 393 DARLING STREET BALMAIN, 2041 AUSTRALIA			KIM, PETER B	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/922,275	SILVERBROOK, KIA	
	Examiner	Art Unit	
	Peter B. Kim	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/113,053.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on Oct. 14, 2003 have been fully considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The written description lacks adequate support for positioning the print head interface on the wafer substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cyman et al. (Cyman) (US 5,949,438) and Ho et al. (Ho) (5,923,882).

Cyman discloses in Fig. 3, an image printing apparatus that comprises a print head (col. 8, lines 26-29), a microcontroller (64) with processor circuitry, print head interface circuitry (600) that is connected between the processor and the print head (Fig. 3) and bus interface that is

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discrete from the print head interface and is connect to he processor so that the processor can communicate with devices other than the print head via a bus. However, Cyman does not explicitly disclose a microcontroller having a VLIW processor with the processor circuitry on a wafer substrate. Official Notice is taken that it is well known in the art of microcontrollers and processors to utilize a wafer substrate to position the processor circuitry. Ho discloses in col. lines 38-54, VLIW processor for printing circuitry. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the processor circuitry of Cyman on a wafer substrate in order to achieve smaller size and easier manufacturing, and to provide a microcontroller with VLIW processor to the invention of Cyman in order to optimizing communication as taught by Ho in col. 7, line 53 - col. 8, line 10.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cyman et al. (Cyman) in view of Granzow (5,751,318) and Ho et al. (Ho).

Cyman discloses in Fig. 3, an image printing apparatus that comprises a print head (col. 8, lines 26-29), a microcontroller (64) with processor circuitry, print head interface circuitry (600) that is connected between the processor and the print head (Fig. 3) and bus interface that is discrete from the print head interface and is connect to he processor so that the processor can communicate with devices other than the print head via a bus. However, Cyman does not explicitly disclose a microcontroller with the processor circuitry with VLIW processor on a wafer substrate. Cyman also does not disclose a page width print head with a plurality of nozzle with micro electromechanical device that is capable of ejecting ink from a nozzle. Official Notice is taken that it is well known in the art of microcontrollers and processors to utilize a

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wafer substrate to position the processor circuitry. Ho discloses in col. lines 38-54, VLIW processor for printing circuitry. Granzow discloses in Fig. 1, 10 and 14, a page width printhead with a plurality of nozzle arrangements with a micro electromechanical device for ejecting ink (col. 14, lines 8-40, col. 16, lines 24-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the processor circuitry of Cyman on a wafer substrate in order to achieve smaller size and easier manufacturing. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide a page width print head of Granzow and the VLIW processor of Ho to the invention of Cyman because of the advantages provided by a page width printhead such as eliminating movement of the printhead and thereby increasing reliability as taught by Granzow in col. 3, lines 56-67 and optimization of communication as taught by Ho in col. 7, line 53 – col. 8, line 10.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cyman et al. (Cyman) in view of Granzow as applied to claim 2 above, and further in view of Lloyd (EPA 0334546).

The further difference between the modified Cyman and the claimed invention is the print head interface configured to define a number of registers for storing clocking and control information. Lloyd discloses in Fig. 1, a print head interface (13 and 19) which defines a number of registers for storing clocking information to be received by the print head in accordance with a predetermined algorithm (col. 6, lines 23-59) from the processor circuitry (21, 23). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the print head interface which defines a number of registers for storing clocking information because

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such arrangement can be adjusted routinely at printer start up and/or periodically during operation which helps to accommodate gradual changes in power and avoid adverse effects of heat as taught by Lloyd in col. 5, lines 1-19.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cyman et al. (Cyman) in view of Granzow and Lloyd as applied to claim 2 above, and further in view of Kupcho et al. (Kupcho) (5,670,995).

The further difference between the modified Cyman and the claimed invention is the print head interface circuitry connected to an address and data bus which is connected to a central processing unit of the microcontroller and the interface circuitry connected to buffer memory. Kupcho discloses in Fig. 5, the print head interface circuitry (216) connected to the data bus and connected to CPU of microcontroller (computer system, col. 8, lines 60-67) which addresses the registers with the clocking and control information (col. 9, lines 12-40). Kupcho also discloses the memory buffer (220, 218) connected the interface. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the data bus and the memory buffer because such arrangement makes an efficient use of computer's computational resources and it also decreases the amount of time required to form an image as taught by Kupcho in col. 3, lines 1-7 and col. 9, lines 41-61.

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Remarks

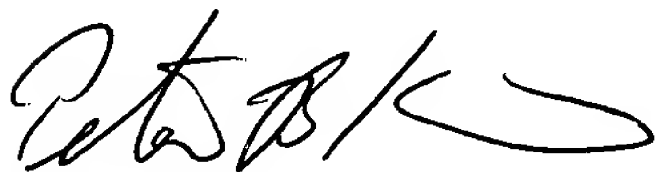
Due to modified rejection, the current office action is made non-final.

Applicant argues that specification pages 139-143 sufficiently describe the use and function of the print head interface. Applicant also argues no distinction as to "why one skilled in the art would be able to make and use the processor circuitry but not the print head interface circuitry." However, the reason for the rejection was that the written description does not adequately disclose processor circuitry on the wafer substrate and the print head interface circuitry on the same wafer substrate. Applicant's arguments do not seem to address this issue.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Peter B. Kim

Patent Examiner

November 17, 2003